Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	**)**	**RE: WTB 16-239**
	)	**RM-11708, RM-11759**
Amendment of Part 97 of the Commission's	**)**	**DA 17- 1180, FCC 16-96**
Amateur Radio Service Rules	**)**	**PSHSB 17-344**
to Permit Greater Flexibility	**)**	**RM-11306**
in Data Communications	**)**	

To: The Chief, Wireless Telecommunications Bureau, PSHSB,
AND Scot Stone, Stanislava Kimball, Paul Moon, Laura Smith

Via: ECFS Electronic Filing

Reply comments filed on November 13, 2018

REPLY COMMENTS TO Hans-Peter Helfert of SCS

Since the referenced letter to Scot Stone has appeared in the on line data base after the normal WT 16-239 comment period, as well as six months after its actual receipt, I respectfully request that this reply comment also be accepted to clarify matters further, and aid in resolution of these contentious 10 year matters. It inappropriately appeared in Puerto Rico relief hearings. I take Helfert's letter as an indication that deliberation is underway, and further input is OK. Janis Carson, AB2RA therefore replies to the SCS comments in the FCC record as: FCC ID: 110731917879
https://ecfsapi.fcc.gov/file/110731917879/16-239.pdf

I. INTRODUCTION, EXECUTIVE SUMMARY

The post period comment nevertheless appeared this week as a letter to Scot Stone of the FCC from Hans-Peter Helfert of SCS, a manufacturer of Pactor Modems, a key element in the ongoing ARRL petitions. These modems were originally developed for Sailmail on commercial frequencies for email use, and are also used by blue water sailors in the amateur spectrum. Certain features of the SCS products that are proper for the commercial spectrum are not appropriate for the amateur spectrum. I welcome the thoroughness the FCC has exhibited in following this question up with a letter of inquiry, and hope it is a harbinger of a long awaited resolution of these matters.

Because of Helfert's list of available decoders, I request that the FCC ask for price quotes to verify their impracticality to "Enable the Enforcement Bureau of FCC to effectively utilize its limited

resources” to monitor Pactor ARQ (Automatic Repeat Request) transmissions.

Because of the subtle wording of the Helfert letter and its ambiguities about ARQ vs FEC (Forward Error Correction) decoding, I urge that FCC's thoroughness include an actual test of the capabilities of an SCS P4dragon DR-7800 modem (procured privately, to ensure it is an unmodified publicly available version) to decode Pactor 2, 3, and 4 in ARQ mode by an FCC engineer. If this test fails to decode the live, off the air Winlink ARQ mode transmissions used for email, it should definitively put the question to rest. Doing so will provide proof of “due process” that cannot be challenged later. An alarm bell has been ringing loudly at the FCC for 10 years. It warrants sending at least one fireman to see if it is a false alarm. The FCC has spent thousands of hours putting pirate radio FM broadcasters of the air one at a time. This deserves enforcement too, and the demonstration does not take that much time. It definitively ends the aggravation of moderating “He said, they said”. It also serves warning on any future digital modes or systems to comply with the rules.

Finally, Helfert's letter confirms the use of an “unspecified code” that is not “documented publicly” on amateur HF spectrum. FCC Part 97.305, 307, and 309 allows for this on VHF and UHF under certain circumstances, but does not permit it on HF under ANY circumstances.

There are additional serious homeland security issues.

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II. DISCUSSION:
1. OBJECTIVITY.

I will strive to avoid heated rhetoric and stick to the facts. Helfert comments that he feels unfairly singled out: "Only PACTOR seems to be a special case due to the permanent defamation by some notoric PACTOR haters". I object to Helfert's unprofessional, pejorative characterization of those of us who have presented fact based reasonable comments on this matter, and urge the FCC to take a more tempered approach. Its not defamation if we tell the truth. Helfert's bias is expected, since he is employed by SCS. I also had to respond to Matthew Pitts regarding the "notoric" activities of his Winlink associates, Steve Waterman, Phil Sherrod, and Dave Skolnick of Seven Seas Cruising Association about their comment pushing activity; most consisted of "Hooray for free email, pass RM-11708" from people with no call signs. The FCC knows how to handle this bulk "Internet Neutrality" style commenting. Refer to:

https://ecfsapi.fcc.gov/file/10100754910405/MATTHEW%20PITTS%20REBUTTAL1.pdf

2. FACT: PACTOR USE ON HF IS A "SPECIAL CASE".

Automatic Control on HF IS very much a "special case" as recognized in Part 97.221, which is badly in need of revision to protect any legitimate SCS device use as well as other incumbent narrow band amateur uses. Approximately 90% of commenters opposed implementing WT 16-239 unless the FCC's proposed unlimited band width or the ARRL's proposed 2.8 Khz band width emissions for any automatic digital mode was contained in a separate ACDS band segment, as also permitted by the FCC comment guidelines, to be determined by a Part 97 rule, rather than unenforceable arbitrary voluntary band plans promulgated by various special interest groups which want the entire DATA segments of all HF bands. The ARRL said this (in RM-11306, which sought the same goal, except in the VOICE/IMAGE segment):

"Automatic control of data communications at HF presents technical problems that make sharing with other modes and uses challenging. Fully automatic control, in a network or station configuration where both stations in communication can be under automatic control, unless limited to certain band segments where automatically initiated transmissions can be expected,

complicates efficient sharing of crowded HF spectrum."
Page 8: "The HF allocations offer the least opportunity for frequency re-use, and the higher UHF and microwave bands offer the most flexibility in this respect. The higher frequency bands, therefore, properly offer the widest available bandwidths."
From https://ecfsapi.fcc.gov/file/6518181567.pdf

ARRL admits that a Pactor Winlink RMS store and forward station permanently occupies an HF channel of roughly 3 Khz. It waits there for a call from a user who wants to send email. When that user activates the RMS to send his email, the sequence of transmissions for sending the email and the error correction re-transmissions continue until the process ends for that exchange. Then the next user takes his turn. This is exactly how Pactor and the Winlink email system is designed to work.

97.101 General standards.
(a) In all respects not specifically covered by FCC Rules each amateur station must be operated in accordance with good engineering and good amateur practice.
(b) Each station licensee and each control operator must cooperate in selecting transmitting channels and in making the most effective use of the amateur service frequencies. **No frequency will be assigned for the exclusive use of any station.**
(d) No amateur operator shall willfully or maliciously interfere with or cause interference to any radio communication or signal.

Any incumbent user who attempts a contact in a narrow band mode on that channel is likely to be interfered with when a Winlink user sends an email connect request. I myself have had my narrow band transmissions interfered with, outside the ACDS segment. The HF spectrum CANNOT be shared with incompatible wide band and automatic modes. These methods work locally on coordinated VHF or UHF repeaters due to the short range of those transmissions, but as ARRL agrees, it is a "special case" for world wide propagation on HF for "email repeaters" that needs its own treatment in a separate band segment called the ACDS segment in FCC rules 97.221. That is why the FCC does not allow voice repeaters below 29.5 MHz. The exact size of the 97.221 ACDS segment is a fair topic for debate in the WT 16-239 proceedings, but the flawed proposals have failed to do so. This unprecedented contradiction of "good engineering and good amateur practice" and frequencies "assigned for the exclusive use of (one) station" is demonstrably a "special case", as Helfert notes. **NO OTHER MODE IN AMATEUR USE ON HF BELOW 29.5 MHZ ASSIGNS A CHANNEL TO A SPECIFIC**

STATION. The FCC should use ACDS segments rather than band width as ARRL or 16-239 proposes:

https://ecfsapi.fcc.gov/file/1005214251324/FCC%2016-239%20DISMISSorSTAY1.pdf

Another has expressed these concerns in an FCC petition:

https://ecfsapi.fcc.gov/file/100918881206/PETITION%20FOR%20RULEMAKING.pdf

3. FACT CHECKING HELFERT'S ASSERTIONS ABOUT DECODERS:

The Helfert letter cites various links to third party decoders for Pactor 2, 3, and 4.

A. HOKA.com decoder
http://www.hoka.com/products/code300-32-options/pactor-iii.html
is a product description which decodes pactor 1 2 3 4
PRICE LIST from http://www.hoka.com/price.html
CODE300-32 Extended Version € 7500,00 Euro
Medav SAAB Options for CODE300-32 Extended Pactor I/II/III/IV with Post Processing FBB and Mail * € 8500,00 Euro
TOTAL COST: 16000 Euro or $18080 USD
Additional updates are periodically required. Example:
CODE300-32 Extended - Update from v 3.06 - 3.096 to last version € 3000,00 Euro

B. WAVECOM DECODER
http://www.wavecom.ch/
W-SPECTRA-WB
W74PC WITH APPROPRIATE **OPTIONS DECODES: W-Package HF** PACTOR-II, III, 4
GET A QUOTE AT: http://www.wavecom.ch/contact-us.php

C. SAAB DECODER
https://saab.com/globalassets/commercial/land/istar/medav-radio-monitoring/demodulators-and-decoders--vd-technology.pdf
Pactor 3 and 4 are listed as options.
CONTACT FOR QUOTE: https://saabgroup.com/contacts/
Saab North America,2101 L St NW, Suite 350,Washington, DC 20037, +1 (703) 406-7900

PRELIMINARY CONCLUSION: Helfert states: “Since also Pactor-3/4 are 'open speech' (can be monitored easily).” The SCS Pactor Dragon modem does not fully decode the most common ARQ mode transmissions for a monitoring station either. The $2000 price would not be an accessible method to monitor by the intent of the Part 97 rules, unless SCS donated significant quantities of them to the FCC field offices and the Amateur Auxiliary. The volunteer Amateur Auxiliary's duty is to “Enable the Enforcement Bureau of FCC to effectively utilize its limited resources” to monitor the transmissions under discussion and has limited resources too. To assert that amateur radio is self policing and require

the use of the decoder products Helfert recommends is ludicrous. I request that Scot Stone verify these prices with a formal request for a quote from the suppliers Helfert listed in his letter.

4. FACT CHECKING HELFERT'S ASSERTIONS ABOUT "SPECIFIED DIGITAL CODES":

The link provided by Helfert: https://www.p4dragon/com/en/Downloads.html does not work. Helfert claims: "Offering complete insight to our technologies also means releasing corporate secrets." Therefore, Pactor 2, 3, and 4 are not "publicly documented" or a "specified code" by any rational definition. The OLD Pactor (1) was a decodable "specified code", and therefore "publicly documented", and shows up in this FCC list. The newer Pactor 2, 3, 4 versions are NOT specifically listed, are proprietary, unspecified, and should not have been legally considered added by default without "public documentation" simply because an earlier version was listed.

"FCC 97.309 RTTY and data emission codes: (4) An amateur station transmitting a RTTY or data emission using a digital code specified in this paragraph may use any technique whose technical characteristics have been documented publicly, such as CLOVER, G-TOR, or PacTOR, for the purpose of facilitating communications."

Digital mode developers must be required, by Part 97 rule, to provide the means to fully decode their product's emissions in amateur use to enable monitoring and self-policing. The protocol developers should be solely responsible for providing a decoding solution to ensure Part 97 rules compliance. See below FCC Part 97 rules with important phrases underlined *(my explanation in italics)*:

97.305 Authorized emission types.

(c) A station may transmit the following emission types on the frequencies indicated, as authorized to the control operator, **subject to the standards specified in §97.307(f)** of this part.
Following this is the table of amateur frequency allocations. The restrictions to each amateur band are stated in the footnotes for each band assignment, which are then explained in section 97.307:

97.307 Emission standards.

(f) The following standards and limitations apply to transmissions **on the frequencies specified** in §97.305(c) of this part.

(3) Only a RTTY or data emission using a specified digital code listed in §97.309(a) of this part may be transmitted. The symbol rate must not exceed 300 bauds, or for frequency-shift keying, the frequency shift between mark and space must not exceed 1 kHz. *(This section applies to **HF 160 – 12 meters**. This section is under consideration by WT 16-239 with regard to the 300 baud element.)*

(4) Only a RTTY or data emission using a specified digital code listed in §97.309(a) of this part may be transmitted. The symbol rate must not exceed 1200 bauds, or for frequency-shift keying, the frequency shift between mark and space must not exceed 1 kHz. *(This section applies to **HF 10 meters** and is also affected by WT 16-239 with regards to 300 baud.)*

(5)(6)(7) unspecified digital code applies only to 6 meters up through microwaves

97.309 RTTY and data emission codes

(b) **Where authorized by §§97.305(c) and 97.307(f)**, a station may transmit a RTTY or data emission using an unspecified digital code, except to a station in a country with which the United States does not have an agreement permitting the code to be used. RTTY and data emissions using unspecified digital codes must not be transmitted for the purpose of obscuring the meaning of any communication. ***(ONLY at VHF/UHF)***

(4) An amateur station transmitting a RTTY or data emission using a digital code specified in this paragraph may use any technique whose **technical characteristics have been documented publicly**, such as CLOVER, G-TOR, or PacTOR, for the purpose of facilitating communications.

CONCLUSION, VERY IMPORTANT: Use of "unspecified codes" or codes not "publicly documented" such as Pactor 2, 3, and 4 is ILLEGAL ON HF, no exceptions. "97.309(b) Where authorized by §§97.305(c) and 97.307(f) ***(above 6 meters)*** a station may transmit a RTTY or data emission using an unspecified digital code"

5. FACT CHECKING HELFERT'S ASSERTIONS ABOUT "open speech":

Helfert states: "All PACTOR modems provide a comprehensive "monitor mode" in order to allow monitoring the PACTOR traffic by "third parties". FACT: Only FEC transmissions may be decoded. Compressed ARQ is difficult to impossible. In the SCS manual it says "Listen" works with Unproto (FEC). CHALLENGE: Have an FCC engineer do the test with live off the air ARQ mode transmissions and see if it reliably decodes the content, or even consistently obtains the call signs of the stations transmitting. This test should use a standard over the counter SCS Pactor P4dragon DR-7800 modem (to ensure no special modifications have been made to the test unit). Possible vendors for an evaluation unit include: http://www.docksideradio.com/ptcii.htm and http://www.farallon.us/webstore/.

Helfert states: "Pactor 3/4 cannot be used as a means of hidden communications."

See page 4 features list of this Winlink presentation: www.va3rom.com/docs/The%20Winlink

%202000%20Hybrid%20Radio-Only%20Network.pdf Also with the use of PGP encryption freeware before sending, a it passes through the system like any text message or binary grib file.

CONCLUSION: End this "hung jury" please. Have Scot Stone arrange a live test with an FCC engineer with amateur radio experience. Can the FCC's enforcement person, Laura Smith, decode these ARQ mode Pactor emissions? She might have valuable input and be interested in the demo.

6. WHAT SPECTRUM OPTIONS ARE AVAILABLE?

The FCC should consider more appropriate commercial spectrum as a solution for maritime users (which would avoid the restrictions on encryption and pecuniary use of amateur radio). If the FCC believes email use of HF should be subsidized to serve a group that is under served by the internet, the FCC should provide those licenses and spectrum for free to them out of the commercial ship to shore allocations, rather than asking amateur radio operators to subsidize it out of their limited resources, with all its inherent complications. These Sailmail stations are FCC registered to this contact person, who is an officer of Seven Seas Cruising Association, as noted in the New York Times article:

https://www.nytimes.com/2001/11/22/technology/radio-e-mail-connects-ships-to-shore.html

SAILMAIL ASSOCIATION, ATTN Stanley K Honey
P.O. Box 850, 39270 Paseo Padre Pkwy
Fremont, CA 94538
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=1971067
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=1973478
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=1977558
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=2352953
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=2380629
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=2616358
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=3166226
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=3426015
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=3426016
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=1977864
http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=1981948

Use of amateur spectrum for "97.115 (5) Communications, on a regular basis, which could reasonably be furnished alternatively through other radio services" such as Sailmail is a practice which many amateurs reasonably opposed. Ordering boat parts, posting to a blog, or Facebook has absolutely

nothing to do with emergency communications, nor does free email advance the state of the radio art or qualify as legitimate activity enumerated by Part 97.1. To assert that it does is patently disingenuous. That it has been tolerated by the ARRL and FCC or practiced widely by even unlicensed persons who are not properly authenticated by the gateways to the Winlink system does not justify its continuation. Widespread violation of law does not logically support abolishment of law; rather it demands vigorous enforcement.

"§97.219 Message forwarding system.
(d) For stations participating in a message forwarding system, the control operator of the first forwarding station must:
(1) Authenticate the identity of the station from which it accepts communications"

See evidence of widespread misuse and call sign pirating, including failure to authenticate:

https://ecfsapi.fcc.gov/file/7521315143.pdf

Winlink and Pactor advocates also fail to prevent misuse from unlicensed on shore users who send emails automatically over HF radio by authenticating identity or ensuring content meets FCC rules. Would anyone ordering boat parts include a credit card number if the system were decodable?

CONCLUSION: This is a clear demonstration of the ongoing failures in regulating, monitoring and enforcing this activity without the available ability to decode it and report it by any agency.

7. HOMELAND SECURITY ISSUES: The commercial misuse of amateur radio is troubling. The potential misuse of transmissions by drug cartels or terrorists (which the FCC's own enforcement bureau, Laura Smith cannot decode) is alarming. Some countries have identified this danger and have prohibited it. A single lethal instance of this misuse could shut down amateur radio for all uses, losing its "benefits" of technical training, emergency communications and public service. Failure to prevent this danger could raise reasonable questions at a subsequent legislative hearing. These possible "costs" to the American public and 750,000 licensed amateurs compared to the "benefit" to 10,000 maritime users for free email, seems questionable. Commercial email providers can be monitored by the FBI. Moving those 10,000 maritime users to Sailmail better serves the public interest. It better serves those

maritime users who can legally encrypt their business and personal communications to securely trade stocks or do online banking, or safely use their credit cards to buy boat parts.

SCS products can legally be used there.

Furthermore, if ARRL, Winlink, ARSFI, and others have received taxpayer financed government funds or grants to provide emergency communications, and have used them instead to subsidize the 10,000+ maritime users free email entitlement, that should be investigated too. I fully support the use of amateur radio for legitimate emergency communications, and have filed a petition to expedite it: https://ecfsapi.fcc.gov/file/120762254440/FCCpetitionRACESdigital.pdf

III. FINAL CONCLUSIONS: The letter from Helfert has some serious flaws that merit further investigation. To assert that amateur radio is self policing and provide no practical decoding solutions is outrageous. To fail to separate these fundamentally incompatible emissions into a separate ACDS segment (an alternative suggested in 16-239) will result in chaos and many enforcement actions. The appropriate size of that segment has not been debated, even though many advocated for this method. I respectfully request that the FCC consider this information and suggested actions provided, and move toward a speedy dismissal or revision of 16-239 which confines HF email to certain band segments, if it allows it at all. This approach was supported by about 90% of commenters in WT 16-239. Please consider this more reasonable alternative instead of full DATA segment takeover:

https://ecfsapi.fcc.gov/file/1005214251324/FCC%2016-239%20DISMISSorSTAY1.pdf

Respectfully submitted as further evidence and clarification,
/S/
Janis Carson, AB2RA, member of ARRL 40 years, licensed since 1959.